an electrolyte disposed in the housing and in fluid communication with the nickel cathode and the separator; and

a frame defining a plurality of apertures and disposed in the housing, the iron anode disposed inside the frame, at least one of the plurality of apertures establishing fluid communication between the iron anode and the electrolyte through the separator.

17. (New) The rechargeable nickel-iron electrochemical cell of claim 16 further comprising a charging electrode disposed in the housing between the iron anode and the nickel cathode.

Amendments to the Drawings

The attached sheet of drawings includes changes to Figures 1-3. This sheet, which includes Figures 1-6, replaces the original sheet including Figures 1-6. No new matter is added.

REMARKS

Figures 1 and 2 are objected to as failing to be designated as prior art. Figure 3 is objected to because an element has been labeled incorrectly.

Claims 1-5 have been rejected under 35 U.S.C. 112, First Paragraph as being non-enabling.

Claims 1-2 have been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,093,213 to O'Callaghan (hereafter "O'Callaghan") or U.S. Patent 5,147,736 to Lapp (hereafter "Lapp").

Claims 1 and 3 have been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 4,684,585 to Tamminen (hereafter "Tamminen")

In the present Amendment, claims 1-5 have been canceled and claims 6-17 have been added and are presented for consideration. Applicant respectfully submits that no new matter is introduced by the present Amendment.

Claims 6-17 are pending.

The Drawings are Amended to Correct Matters of Form

The Office Action indicates Figures 1 and 2 are objected to as failing to be designated as prior art. Figure 3 is objected to because an element has been labeled incorrectly.

Figures 1 and 2 have been amended by being designated as "prior art". Figure 3 has been amended by having element 316 correctly identified. Applicant submits that this objection is now overcome.

Rejection of Claims 1-5 under 35 U.S.C. 112, First Paragraph

Claims 1-5 have been canceled and claims 6-17 have been added to more particularly point out and distinctly claim the invention. Support for these amendments can be found, at least, on page 9, lines 4-10, and in Figure 6. Applicant submits that this rejection is now overcome.

Rejection of Claims 1 and 2 Under 35 U.S.C. Section 102(b)

The Office Action states that O'Callaghan teaches electrolytes flowing through inlet tubes via manifolds, where the inlet tubes feed into the manifold. Further, there is an outlet and outlet conduit that allows the electrolyte to flow back into the electrolyte reservoir.

The Office Action also states that Lapp teaches tubes and inlets that provide fluid access between the metal air cells.

Applicant has amended the claims to more particularly point out and distinctly claim the invention. The present invention, as recited in independent claim 6, is directed to a rechargeable metal air cell comprising a housing, an anode, a cathode, and a separator. The anode, cathode, and separator are disposed in the housing and the separator envelops the anode. The cathode is in ionic communication with the anode through the separator. An electrolyte is also disposed in the housing and is in fluid communication with the cathode and the separator. Further, at least one tube is disposed

in the housing. The at least one tube defines a proximal opening and a distal opening. The proximal opening contacts the anode through the separator and the distal opening contacts the electrolyte thereby establishing fluid communication between the anode and the electrolyte through the tube.

In contrast, O'Callaghan is directed to a metal-air battery having a recirculating electrolyte. The battery comprises a tank defining a reservoir for liquid electrolyte, a support panel mounted in the tank above the electrolyte reservoir, a plurality of individually removable metal-air cells mounted in side-by-side relationship on the support panel with air gaps therebetween, and a circuit means for connecting the cells to an external load.. Each cell comprises a pair of spaced-apart flat side walls joined by end faces and top and bottom faces. The side walls include air cathodes, a metal anode mounted between and spaced from the flat side walls, and an electrolyte inlet connector below the lower edge of the anode and an electrolyte outlet connector. The connectors are adapted to removably extend through openings in the support panel, and the outlet connector is adapted to return electrolyte to the reservoir.

Further, and also in contrast to applicant's invention, Lapp is directed to a manifold system for equalizing electrolyte flow to a plurality of metal/air cells of a fuel cell assembly. The fuel cell comprises a housing, a plurality of metal/air cells disposed vertically in the housing, air injection means for flowing oxidizing air between the metal/air cells, an electrolyte storage tank, a recirculation loop for continuously recirculating electrolyte from the storage tank through the metal/air cells, and an electrolyte inlet manifold forming part of the recirculation loop. The manifold comprises a large manifold tube extending horizontally beneath a plurality of the metal/air cells and a plurality of small feeder tubes extending horizontally, laterally from the large tube. Each small feeder tube extends across beneath a single metal/air cell and flow connecting to the bottom of the cell. The large tube has a diameter sufficiently greater than the diameter of the small feeder tubes such that the total combined

flow of all of the small feeder tubes does not cause a significant pressure drop in the large manifold tube. Each feeder tube has a length and diameter to provide a friction pressure drop therethrough which is sufficiently high that the static pressure head difference due to elevation at the cell inlet between the lowest and highest cells in an inclined stack is very small compared to the pressure drop across each individual small feeder tube.

Unlike the applicant's invention, O'Callaghan and/or Lapp do not, in any way, describe a rechargeable metal air cell that includes a tube entirely disposed in a housing along with an anode enveloped by a separator, and a cathode; where the tube enables fluid communication between the anode and the electrolyte, and the separator enables ionic communication between the anode and the cathode. Further, the applicant's invention does not teach a tube being used to recirculating or equalizing an electrolyte.

In view of the foregoing, it is respectfully submitted that neither O'Callaghan nor Lapp teaches or suggests the subject matter recited in claim 6. Specifically, both references fail to teach or suggest a rechargeable metal air cell comprising a housing, an anode, a cathode, and a separator. The anode, cathode, and separator are disposed in the housing and the separator envelops the anode. The cathode is in ionic communication with the anode through the separator. An electrolyte is also disposed in the housing and is in fluid communication with the cathode and the separator. Further, at least one tube is disposed in the housing. The at least one tube defines a proximal opening and a distal opening. The proximal opening contacts the anode through the separator and the distal opening contacts the electrolyte thereby establishing fluid communication between the anode and the electrolyte through the tube.

Independent claims 8, 10, 12, 14, and 16 recite similar features as claim 6, and are therefore patentable over O'Callaghan and Lapp for the reasons discussed in connection with claim 6. Lastly,

claims 7, 9, 11, 13, 15, and 17, which depend directly or indirectly from the independent claims 6, 8, 10, 12, 14, and 16, incorporate all of the limitations of the corresponding independent claim and are therefore patentably distinct over O'Callaghan and Lapp for at least those reasons provided for claim 6.

Rejection of Claims 1 and 3 Under 35 U.S.C. Section 102(b)

The Office Action states that Tamminen teaches a rechargeable nickel-zinc battery that uses a tube that allows liquid solvent to flow between two electrodes. The fluid can flow out of the tube, through a pump, through another tube and into a housing where the electrolyte travels through another tube into the cells.

Applicant has amended the claims to more particularly point out and distinctly claim the invention. The present invention, as recited in independent claim 6, is directed to a rechargeable metal air cell comprising a housing, an anode, a cathode, and a separator. The anode, cathode, and separator are disposed in the housing and separator envelops the anode. The cathode is in ionic communication with the anode through the separator. An electrolyte is also disposed in the housing and is in fluid communication with the cathode and the separator. Further, at least one tube is disposed in the housing. The at least one tube defines a proximal opening and a distal opening. The proximal opening contacts the anode through the separator and the distal opening contacts the electrolyte thereby establishing fluid communication between the anode and the electrolyte through the tube.

In contrast, Tamminen teaches a rechargeable, electrochemical generation apparatus and method that has bipolar nickel-zinc electrode cells in a stacked, serially connected configuration. This configuration provides improved reliability and charge-discharge cycling capability. The apparatus employs a rotatable container having mounted therein a plurality of the electrode cell assemblies. An electrolyte solution is circulated, preferably according to a pulsed circulation, through the electrolyte cells. The electrode cells have an anode and a cathode electrode element, and each element has a

substantially planar surface in contact with the electrolyte solution. The cells are mounted so that the planar surfaces of the electrodes align with the radial direction of the centrifugal force created by rotation of the container. The container, and hence the cells, are rotated to create centrifugal forces on the order of one hundred times the pull of gravity at the outer rims of the cells.

Unlike the applicant's invention, Tamminen does not, in any way, describe a rechargeable metal air cell that includes a tube entirely disposed in a housing along with an anode enveloped by a separator, and a cathode; where the tube enables fluid communication between the anode and the electrolyte, and the separator enables ionic communication between the anode and the cathode. Further, the applicant's invention does not teach a tube being used to cycle an electrolyte into, or out of, a housing (or cell) via pump or any other means.

In view of the foregoing, it is respectfully submitted that Tamminen does not teach or suggest the subject matter recited in claim 6. Specifically, Tamminen fails to teach or suggest a rechargeable metal air cell comprising a housing, an anode, a cathode, and a separator. The anode, cathode, and separator are disposed in the housing and the separator envelops the anode. The cathode in ionic communication with the anode through the separator. An electrolyte is also disposed in the housing and is in fluid communication with the cathode and the separator. Further, at least one tube is disposed in the housing. The at least one tube defines a proximal opening and a distal opening. The proximal opening contacts the anode through the separator and the distal opening contacts the electrolyte thereby establishing fluid communication between the anode and the electrolyte through the tube.

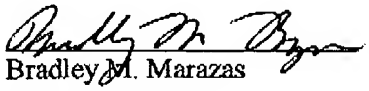
Independent claims 8, 10, 12, 14, and 16 recite similar features as claim 6, and are therefore patentable over Tamminen for the reasons discussed in connection with claim 6. Lastly, claims 7, 9, 11, 13, 15, and 17, which depend directly or indirectly from the independent claims 6, 8, 10, 12, 14,

and 16, incorporate all of the limitations of the corresponding independent claim and are therefore patentably distinct over Tamminen for at least those reasons provided for claim 6.

CONCLUSION

In view of the foregoing, applicants respectfully request reconsideration, withdrawal of all rejections, and allowance of claims 6-17 in due course.

Respectfully submitted,



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